

ABSTRACT

The invention uncovers a A complex polarizer system ("cross-polarizer") comprising including an arrangement of at least three polarizing beam splitting layers P1,P2,P3 with their polarizing layer vectors V1,V2,V3. P1 and P2 are arranged such that a [[sub-]]beam transmitting transmitted by P1 along an optical axis A1 is reflected [[at]] by P2 without further polarization rotating components because V1 and A1 span a plane which is normal to the plane spanned by V2 and A1; P3 is arranged such that a [[sub-]]beam being reflected by P1 from A1 into the optical axis A2 transmits P3 because V1 and A2 span a plane which is normal to the plane spanned by V3 and A2 without further polarization rotating components. The congeneric processing of the two sub-beams of a beam split at P1 (both sub-beams go through a transmission and a reflection) eliminates the intrinsic asymmetries of simple polarizers with respect to purity and folding, and is a consequence of the described perpendicular crossing of planes ("cross-polarizer"). Coupling of cross-polarizers results in efficient arrangements of systems which operate with complementarily polarized radiation, e.g. 2-channel image display systems with polarization-rotating reflective spatial light modulators (e.g. Liquid Crystal on Silicon displays).